



Calculation of wall thickness

$$a = \frac{D}{2} \times \left(1 - \sqrt{\frac{10 \times F \times R_e - Ph \times \sqrt{3}}{10 \times F \times R_e}} \right) = \underline{\underline{6,19 \text{ mm}}}$$

Guaranteed minimum wall thickness:

$$a' = \underline{\underline{6,2 \text{ mm}}}$$

$$F = \frac{0,65}{R_e / R_g} = \frac{0,65}{990 / 1139} = 0,747$$

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+) Allowable gases to be filled:

- UN1002 Air
- Gases of group 1, 4, 5, 6, 7, 8, 9, 10 according to EN ISO 11114-1

Beim Flaschenwerk 1
A-3291 Kienberg/Gaming

WORTHINGTON
CYLINDERS
A Worthington Industries Company

Specification	Material	34CrMo4-Steel		Yield point (R _e)	min.	990	N/mm ²
EN1964-2 / ISO9809-2	Heat treatment	quenched and tempered		U.T.S. (R _g / R _{mmax})	1139 / 1220 N/mm ²		
Type	EXTRA-5			Chemical composition		Elongation	min. 12 % (L ₀ =5,65 · S ₀)
Name of gas	+)			C	0,32 - 0,36 %	S	≤ 0,010 %
Water capacity	50	l	Mn	0,60 - 0,80 %	Cr	0,95 - 1,15 %	Impact value (cross) A-value 35 J/cm ²
Filling weight	—	kg	Si	0,15 - 0,30 %	Mo	0,17 - 0,27 %	ISO-V (-50°C) B-value 50 J/cm ²
Working pressure (Ps)	≤ 300	bar	P	≤ 0,015 %	Drawn Amend. Rev.1 Rev.2 Rev.3		
Test pressure (Ph)	450	bar	P+S	≤ 0,020 %	FZ	Name	PJ
Weight empty	~ 62,0	kg	V+Nb+Ti+B+Zr	≤ 0,15 %	12.07.07	Date	05.06.14
Title	Seamless Steel Cylinder				WF	Checked	WF
Notes	Manufacturer's process: from billet Burst pressure P _b ≥ 720 bar; Yield pressure P _y ≥ 603 bar				05.11.07	Date	05.06.14
				Drw.no			
				N5000 229 62 11 - 7 Rev.1			